REMARKS

Claims 1 and 17-42 are currently pending in the present application. Claims 23-42 are cancelled, without prejudice. Applicants have added new Claims 43-59. Applicant wishes to file this amendment and briefly respond to the Examiners rejections in the Office Action dated May 22, 2007.

I. APPLICANT'S SPECIFICATION ADEQUATELY SUPPORTS CLAIMS 17-21

The Examiner asserted that "the specification does not disclose the p-surface is comprised of one or more polygons."

Dependent Claims 17-21 recite, respectively:

17. The method of claim 1, wherein the p-surface comprises polygons approximating a partial sphere.

18. The method of claim 1, wherein the p-surface comprises one or more polygons such that there exists a half-space for each polygon, and wherein the intersection of all such half-spaces includes at least one point in common.

19. The method of claim 18, wherein a point is within the p-surface if it is included in the intersection.

20. The method of claim 1, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the union of a given set of half-planes, wherein the set includes no more than one half-plane per polygon.

21. The method of claim 1, wherein the p-surface comprises one or more polygons, and wherein a point is within the p-surface if it is included in the intersection of a given set of half-planes, wherein the set

includes no more than one half-plane per polygon.

Paragraph [0036], page 12 of the Application provides a definition of a P-Surface and further provides evidence of P-Surfaces that are comprised of one or more polygons:

> P-Surface: a computer graphics representation of any surface with a well-defined inside and outside, where there exists at least one point x inside (neither intersecting, nor lying outside) the surface which may be connected to every point of the surface with a distinct line segment, no portion of which said line segment lies outside the surface or intersects the surface at a point not an endpoint. The union of all such points x form the region X of the p-surface. For a convex p-surface, the region X is all points of the interior of the p-surface. Examples of computer graphics objects which may be modeled as p-surfaces: tetrahedron, cube, sphere, ellipsoid, cylinder, apple torus, lemon torus, b-spline surfaces closed or periodic in u and v. A p-sphere is a p-surface.

Examples of P-Surfaces listed that are considered polygons, by definition, are, for example, a tetrahedron and a cube. Polygons are commonly defined as plane figure with closed path composed of a finite sequence of straight lines. These line segments are the sides, and the points where two sides meet are the polygon's vertices or corners. Polygons are 2-dimensional. But it is obvious that a cube is an example of six quadrilaterals (e.g. squares) joined together at the edge, and a tetrahedron is an example of three triangles joined together at the sides. Triangles are currently commonly and extensively used in computer 3D graphics models and can be utilized to model spheres.

Specifically, in computer graphics in general, the imaging system calls up the structure of polygons needed for scene generation from a database. During this process, polygons are used in image generation in correct

perspective and in the correct three-dimensional orientation so that from a reference point the polygon image is perceived in 3D on a display system. Although polygons are two dimensional, through the visual system of the computer they are perceived in 3D in a visual scene, such as in a grouping of triangles of various sizes to model a sphere or other curved surface.

Moreover, it is well-recognized that the written description requirement is satisfied by disclosure of descriptive means such as formulas, words, structures, figures, and diagram. *Enzo Biochem Inc. v. Gen-Probe,* 285 F.3d 1013, 62 USPQ2d 1609, 1617 (Fed. Cir. 2002) ("[W]e clarified that the written description requirement is satisfied by the patentee's disclosure of such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention."). Applicant has provided a definition of P-Surface and provided specific examples of polygonal structures for the P-Surface in the specification (e.g. tetrahedron and a cube).

Furthermore, polygons are well known in, and inherent to, the 3D graphics art for computer modeling to generate image data. Texture mapping, as used in the claims, is a well known part of 3D computer graphics. The use of polygons is an inherent attribute of technology for 3D computer graphics and texture mapping; polygons must be used. Computer graphic objects' surfaces are represented by polygons, so by definition, a p-surface must include at least one polygon for a computer graphics representation of any surface.

Additionally, at paragraph 0033, it is stated:

> It should be mentioned that when the user selects a viewpoint at the center of this sphere and renders the view using the primitives of a conventional 3D graphics system ...

"Primitives" is a well known term of the present art referring to polygons (among other things) in a conventional 3D computer graphics system. "Primitives" are simple geometric shapes (e.g. segments of straight lines, circles, curves, boxes, and polygons) used in graphics programming to build objects. Triangles, rectangles, circles, arcs are examples of common primitives inherently used in 3D computer graphics. One of ordinary skill in the art, reading that term in the context of the present claims and the specification, would inherently understand the meaning and scope of the claim, and would also understand that the inventor of the present application had possession of the claimed invention, and was claiming the p-surfaces composed of polygons as described.

II. APPLICANT'S SPECIFICATION ADEQUATELY SUPPORTS CLAIM 22

In rejecting claim 22 under 35 U.S.C. § 112, first paragraph, the Office Action asserts that "the specification does not disclose the full-surround data is a sample of incoming image data." Dependent Claim 22 recites:

22. The method of claim 1, wherein the full-surround image data is a sample of incoming image data.

Applicant's specification at paragraph [0036], page 11, provides a definition of full-surround image data. It states:

> FULL-SURROUND IMAGE DATA: **data which samples the points P.** This data encodes, explicitly or implicitly, the association of a color value with a given direction from a given point of projection. It should be mentioned at this point that **full-surround image data is useful in many fields of entertainment because, when delivered to many**

> **viewers, it enables the construction of an independent viewing system defined below.** *(emphasis added).*
>
> "The points P" is defined in Applicant's specification at paragraph [0036], page 1 1: POINTS P: The visible world.

The full-surround image data that is delivered to viewers, as provided by definition, *supra,* would necessarily be incoming data. For example, full-surround image data can comprise texture maps built from two fishlens pictures. *Para 0042-0044.* The computer program at Figs. 9A-10B in the incorporated CD-ROM shows data sampling to build hemispherical data sets. As shown by para 42 and Figs. 10A-B, P-spheres, and inherently the full-surround data, are dependent on sampling the incoming image data (*see also Application 09/871,903*). Further, Applicant explicitly discloses in para 0049 that "multiple users can receive a single set of full-surround image data and generate corresponding multiple display images….." Based on the Applicant's specification definitions of Full-Surround Image Data and Points P, and context of the specification, it would be clear to one of ordinary skill in the art, that Full-Surround Image Data could be, by definition, a sample of incoming image data as recited by Claim 22. Furthermore, the subject matter is supported in USPN 5,903,782, which is incorporated by reference at page 16 of the present specification. That patent teaches a camera to capture images using wide angle camera systems.

III. THE REJECTION OF CLAIM 1 UNDER 35 U.S.C. § 102 IS AN ERROR OF LAW AND FACT

Claim 1 was rejected under 35 U.S.C. 102 as being anticipated by Chiang et at. ("Chiang"), U.S. 6,028,584. According to the Examiner, Chiang teaches texture mapping. Claim 1 recites:

1. A method of modeling of the visible world using full-surround image data, said method comprising:

selecting a view point within a p-surface;

selecting a direction of view within the p-surface;

texture mapping full-surround image data onto said p-surface such that the resultant texture map is substantially equivalent to projecting full-surround image data onto the p-surface from said view point to thereby generate a texture mapped p-surface; and

displaying a predetermined portion of said texture mapped p-surface.

First, Applicant's U.S. Patent 5,684,937, filed June 7, 1995, teaches texture mapping at column 9, ln 5-22, detailing a C-like pseudo code or algorithm producing a MEV image. Basically, the code teaches that for every pixel position in the output image, a corresponding point in 3D (object) Space (specified by spherical coordinates θ, Ψ) is calculated, which is used to look-up a pixel color in a color table. This texture mapping teaching predates the Chiang reference filing date of August 29, 1997, so Chiang is predated by benefit of U.S. Patent 5,684,937.

Furthermore, Applicant's independent Claim 1 clearly requires the limitation of full-surround data. Chiang does not teach or fairly suggest full-surround image data, because Chiang teaches only panoramic image data. The Office Action maps the limitation "texture mapping full-surround image data" by referencing Figure 4 of Chiang and states at paragraph 10 of the Office Action:

> ..**texture mapping full-surround image data** onto said p-surface such that the resultant texture map is substantially equivalent to **projecting full-surround image data onto the p-surface** from said view point to thereby generate a texture

> mapped p-surface *(Figure 4 is a texture mapping process where the texture map is substantially equivalent to projecting full-surround image data onto the p-surface).*

The full-surround image data in the invention can be taken from a fishlens camera, which captures an approximate hemisphere field of view of data. Full-surround data samples the points P, i.e. the approximate hemispheric, 180° view of the world (e.g. "the visible world"). (*Para 0036*). Chiang uses a panoramic camera to take panoramic pictures, which is essentially a cylindrical data set. *See Chiang*, col 5, ln 27-35 and USPN 5,903,782, col 1, ln 33-50. Chiang's data is not the Points P or visible world of approximate 180°. It is impossible for a panoramic camera to capture the same approximate hemispheric image data as a fishlens, and panoramic data does not sample the points P. Therefore, it is impossible for panoramic data and full-surround data to be the same data. *See also* USPN 5,903,782, col 1, ln 33-38 (incorporated by reference).

It is impossible for a panoramic camera to capture the same image data as a wide-angle camera as that term is used in the invention. Full-surround data, as defined by the specification, samples the points P, or the visible world, i.e. an approximate hemispherical, 180° world view. The term encompasses a human's forward looking world view of 180°. The projection of the visible world on a display surface can include the full 360° sphere. (*See incorporated USPN 5,684,937, Abstract and col 3, ln 40-43 and col. 11, ln 64-65*). Full-surround data textured mapped or projected onto a p-surface can achieve this 360° world view by mapping two approximate 180° views. It is impossible to achieve a 180° or 360° world view from a panoramic view data set, because view data above and below the plane of the panoramic view is not captured.

Therefore, it is impossible for panoramic data and full-surround data to be the same data. (*See also incorporated USPN 5,903,782, col 1, ln 33-38*).

This is not using the specification to read limitations into the claims. On the contrary, the claims **MUST** be interpreted in light of the specification. *Phillips v. AWH,* 415 F.3d 1303, 75 U.S.P.Q.2d 1321 (Fed. Cir. 2005). *Phillips* requires that "claims must be read in view of the specification, of which they are a part." Moreover, the definitions preclude interpreting full-surround data as equating to panoramic. Neither the specification nor drawings support a rational interpretation that equates the panoramic data (i.e. cylindrical data set) of Chiang with full-surround data (i.e. at least approximate hemispherical data set) of the invention. Any such analysis arriving at a conclusion that the data is the same is contrary to the law.

V. NEW CLAIMS 43-59 DO NOT ADD NEW MATTER TO THE CLAIMS

Claims 43-59 add new limitations pertaining to full-surround data and hemispheres. As explained in the present application and USPN 5,903,782, full-surround data is captured by wide-angle visual systems and derived from approximate hemispheric world views. *See Application, paras 42-44 and USPN 5,903,782, col 2, ln 1-27, ln 56 – ln 64.* However, full-surround data is not necessarily a sphere or even a hemisphere, though full-surround data necessarily is derived from an approximate hemisphere view, whether using a wide-angle lens, fisheye lens, or some other visual image system.

IV. WITHDRAWAL OF PRE-APPEAL SUBMISSION FROM THE RECORD

Applicant is concerned that the Pre-Appeal Brief in this matter made substantive mistakes that misconstrue the scope of the claim language regarding full-surround data. Applicant requests that the Pre-Appeal Brief be stricken from the record, or in the alternative, that any argument construed as limiting the scope of the claims to only complete spheres be disregarded. Full-surround data can include spheres or any combination of hemispheres that covers less than a sphere of data and even less than a complete hemisphere.